

## Claims

- [c1] 1. A reduced self inductance signal cable, further comprising:
  - a tube having an internal conduit; and
  - at least one conductor, the conductor located in the internal conduit of tube and having a nonlinear structure which is arranged such that at least two segments of the conductor are arranged such that at least a first and second adjacent segments of the conductor conduct current in opposite physical directions such that the magnetic field in the first adjacent segment negates the magnetic field in the second adjacent segment such that self inductance in the conductor is reduced;
  - whereby frequency group delay in a signal cable is reduced due to the reduction in self inductance in the conductor.
- [c2] 2. A signal cable, as in claim 1, wherein the void in the tube which is not occupied by the conductor is substantially filled with a gel.
- [c3] 3. A signal cable, as in claim 2, wherein the conductor is formed such that the adjacent segments of the conductor are substantially parallel to one another.

- [c4] 4. A signal cable, as in claim 3, wherein the conductor is bent at approximately 90 degree angles to form the adjacent parallel segments of the conductor.
- [c5] 5. A signal cable, as in claim 4, wherein the conductor is bent with curved corners.
- [c6] 6. A signal cable, as in claim 2, wherein the conductor has a substantially sawtooth pattern.
- [c7] 7. A signal cable, as in claim 2, wherein the conductor is bent such that adjacent segments are arranged that angles that are obtuse or acute to one another.
- [c8] 8. A signal cable, as in claim 2, wherein the structure of the conductor is held in place by securing means that secure it to the tube.
- [c9] 9. A signal cable, as in claim 2, wherein:
  - at least two conductors are in the tube; and
  - the conductors are secured together by ties.
- [c10] 10. A reduced self inductance signal cable, further comprising:
  - a tube having an internal conduit;
  - at least one conductor, the conductor located in the internal conduit of tube and having a nonlinear structure which is arranged such that at least two segments of the

conductor are arranged such that at least a first and second adjacent segments of the conductor conduct current in opposite physical directions such that the magnetic field in the first adjacent segment negates the magnetic field in the second adjacent segment such that self inductance in the conductor is reduced; and a first connector attached to a first end of the signal cable and a second connector attached to a second end of the signal cable, the first and second connectors further comprising:

a negative contact; and

a hollow positive contact, the hollow portion of the positive contact having sufficient size such that the conductor can be inserted into the hollow portion of the hollow positive contact and soldered to the hollow positive contact substantially at its end;

whereby frequency group delay in a signal cable is reduced due to the reduction in self inductance in the conductor, and signal distortion is minimized by reducing the distance between the conductor and the end of the positive contact.

- [c11] 11. A signal cable, as in claim 10, wherein the void in the tube which is not occupied by the conductor is substantially filled with a gel.

- [c12] 12. A signal cable, as in claim 11, wherein the conductor is formed such that the adjacent segments of the conductor are substantially parallel to one another.
- [c13] 13. A signal cable, as in claim 12, wherein the conductor is bent at approximately 90 degree angles to form the adjacent parallel segments of the conductor.
- [c14] 14. A signal cable, as in claim 12, wherein the conductor is bent with curved corners.
- [c15] 15. A signal cable, as in claim 11, wherein the conductor has a substantially sawtooth pattern.
- [c16] 16. A signal cable, as in claim 11, wherein the conductor is bent such that adjacent segments are arranged that angles that are obtuse or acute to one another.
- [c17] 17. A signal cable, as in claim 11, wherein the structure of the conductor is held in place by securing means that secure it to the tube.
- [c18] 18. A signal cable, as in claim 11, wherein:
  - at least two conductors are in the tube; and
  - the conductors are secured together by ties.
- [c19] 19. A method of reducing self inductance in a signal cable, including the step of:
  - arranging at least one conductor within a signal cable

such that portions of the conductor are positioned in a nonlinear fashion such that at least two segments of the conductor are adjacent to one another and arranged such that current in one of the segments moves in the opposite physical direction of current and the adjacent segment such that the magnetic fields in the adjacent segments negate each other; whereby the negation of the magnetic fields reduces self induction and frequency group delay.

- [c20] 20. A method, as in claim 19, including the additional step of reducing resonance by filling the voids inside the signal cable with a gel.